

***NREL Growth Forum***

**HIGH SPEED ELECTRIC MOTORS AND  
ALTERNATORS**

by

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**President**

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**DIRECTDRIVE**  
SYSTEMS



# Rationale Behind Direct Drive Systems

- Calnetix is a R&D operation that largely builds motor/alternator components
- Board of Calnetix decided that more value could be created by:
  - Systems versus components
  - Product service company
  - Focus on specific market segments
- A product service company would require:
  - Dedicated management to specific markets and products
  - Different managerial skills and discipline

# TARGET MARKETS

***\$8 B market for Direct Drive Systems' products***

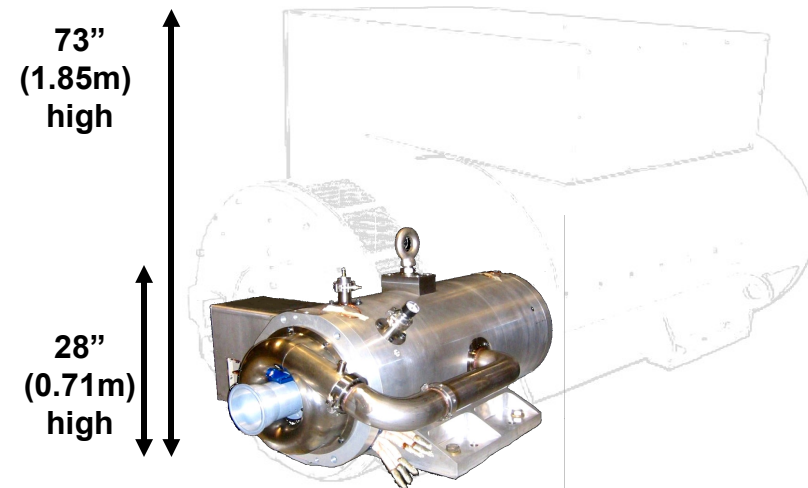
- Motors to drive natural gas pipeline compressors
- Alternators to generate electricity for ships
- Motors and alternators for offshore oil and gas platforms

***Pipeline compression market is \$1.5 B***



# PRODUCT

## Frame 2 successfully tested



DDS Generator vs. Conventional Generator

## Frame 8 in product development

- Can be used as motor and alternator
- Four lines of products: Frame 2, 8, 18, 28
- Proven technology
- 20% size and weight of conventional motors
- Higher reliability and availability
- Higher efficiencies
- Lower initial and operating costs



# EXISTING CUSTOMERS

- **Turbomeca (Division of Safran Group)**
  - French based maker of small gas turbines
  - \$3 billion of revenue



- **Atlas Copco**
  - Swedish based world leading compressor manufacturer
  - \$6 billion of revenue



- **Rolls Royce**
  - UK based power systems manufacturer
  - \$11 billion of revenue



- **Sojitz**
  - Japanese Trading Company
  - \$54 billion of revenue





# VALUE PROPOSITION To Pipeline Companies

## *Relative to an 8 MW Gas Turbine Drive:*

- \$4 million savings in initial cost
- \$8 million per year operational savings
- Lack of emissions
- Unlimited start and stop cycles

## *Relative to an 8 MW Conventional Motor:*

- \$2 million savings in initial cost
- \$0.6 million per year operational savings
- Higher reliability
- Unity power factor



# TECHNOLOGY AND INTELLECTUAL PROPERTY

## *What do we have?*

- Trade Secrets for high speed permanent magnet rotors
- Patented frictionless magnetic bearings
- Proprietary DuPont process for rotor containment
- Custom developed analysis and modeling software
- World's first high power, high-speed motor/alternator

*2,000 KW @ 23,000 RPM!*



# EXPERIENCED MANAGEMENT

<b>Thomas R. Smith</b> <i>President</i>	Extensive experience in the global energy industry, including developing new businesses from start up to exit
<b>Co Huynh</b> <i>Chief Technical Officer</i>	Developer of much of the IP. Expert in high speed machinery and magnetic bearing technology
<b>Herman Artinian</b> <i>VP of Corporate Development and Programs</i>	Former VP of Business Development for Calnetix - background in development of worldwide distribution systems and business alliances
<b>Mike Baker</b> <i>Director of Sales and Application Engineering</i>	Former GE executive who was a District Manger in Houston responsible for automation and motor sales
<b>Albert L.C. Nelson</b> <i>Business Development for Defense</i>	US Navy liaison, executed congressional funding for defense contractors and small businesses
<b>Venky Krishnan</b> <i>Program Manager</i>	Former Indian Naval officer responsible several multi-million dollar international programs as a systems engineer and program manager



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# FINANCIALS

- **Existing development contracts of \$2 million**
- **Existing production contracts of \$40 million**
- **Projected revenues of \$150 million in 2009**
- **EBIT of \$50 million in 2009**
- **Cash flow positive year end 2007**

# ROUND A FUNDRAISING

- Strategy is to seek strategic and financial investors
- We seek to raise a total of \$12 million in this round (\$5.2 million committed)
- DDS will use capital to:
  - Fund the production of the Frame 2
  - Frame 8 product development
  - SG&A



# EXIT STRATEGY

- Likely exit will be a trade sale to an OEM sometime in the next five years
- DDS believes step function value increase when
  - Frame 2 becomes commercially accepted
  - Frame 8 is successfully tested

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